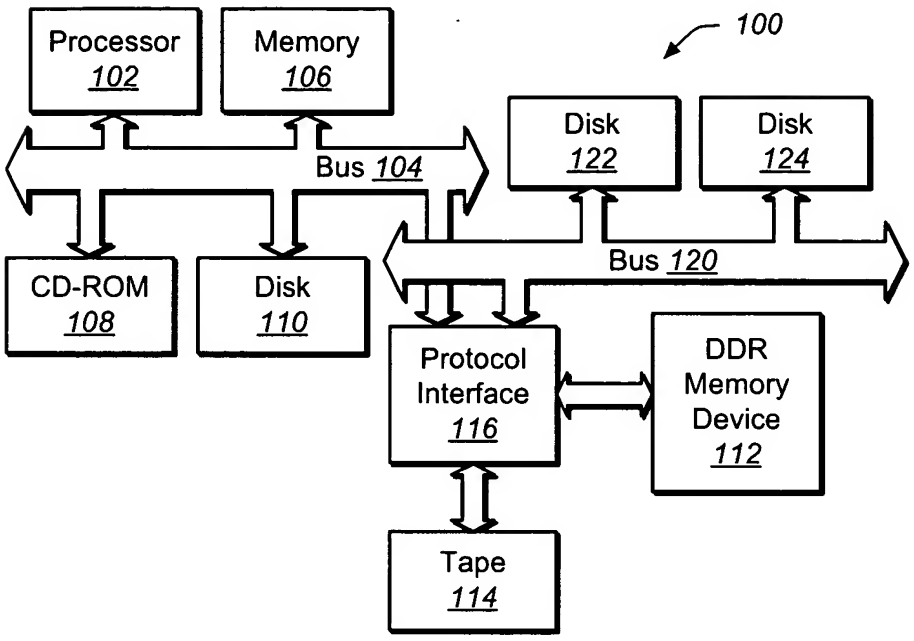
Processor
102
Memory
106
100
Disk
122
Disk
124
Bus 104
Bus 120
CD-ROM
108
Disk
110
Protocol
Interface
116
DDR
Memory
Device
112
Tape
114

FIG._1

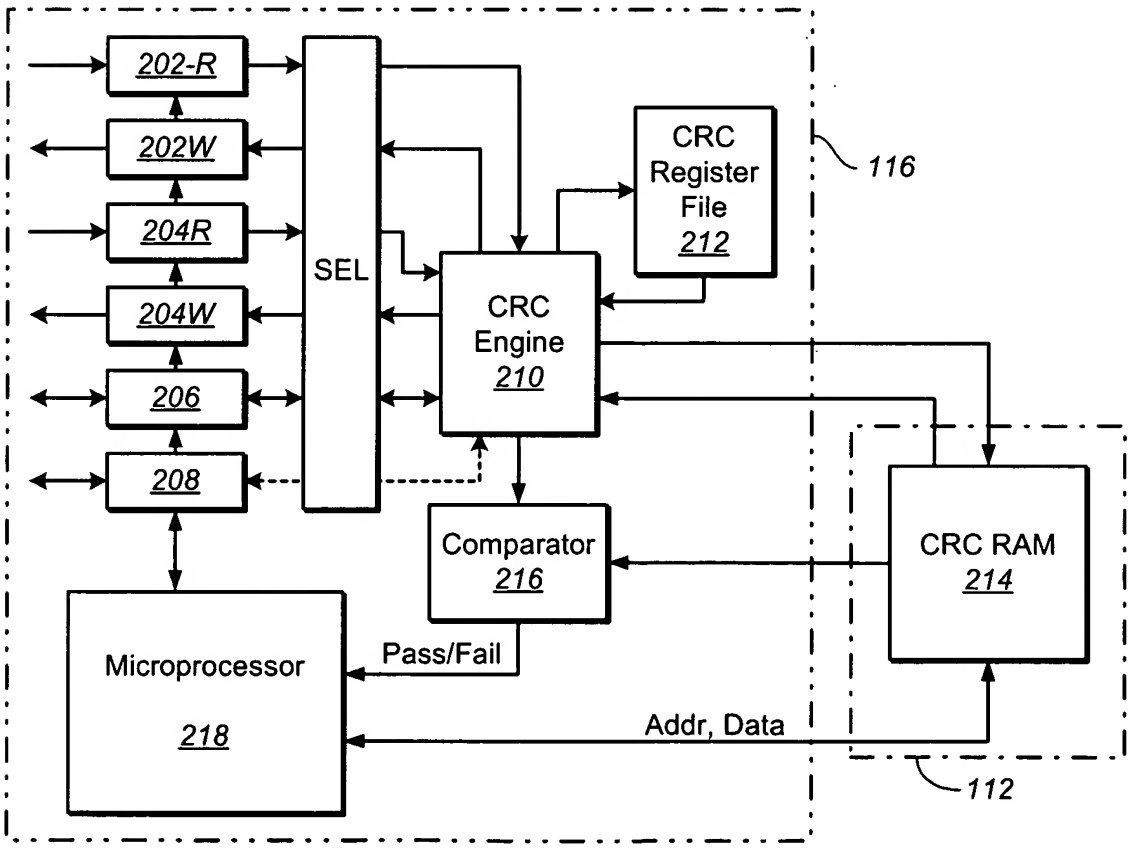
202-R
202W
204R
204W
206
208
SEL
CRC
Register
File
212
116
CRC
Engine
210
Comparator
216
CRC RAM
214
Microprocessor
218
Pass/Fail
Addr, Data
112

FIG._2

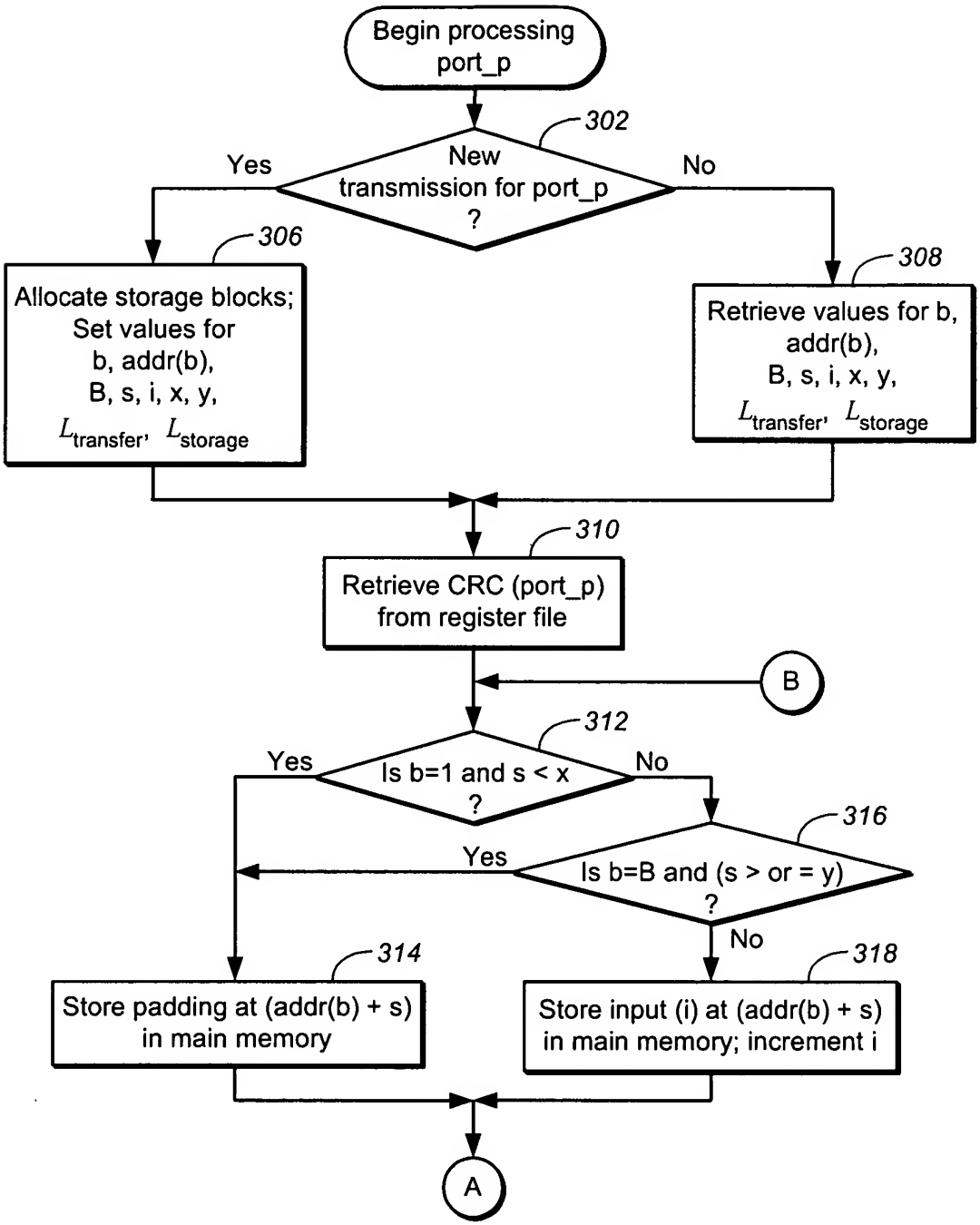
Begin processing port_p
302
New transmission for port_p ?
Yes
No
306
Allocate storage blocks; Set values for b, addr(b), B, s, i, x, y, $L_{transfer}$, $L_{storage}$
308
Retrieve values for b, addr(b), B, s, i, x, y, $L_{transfer}$, $L_{storage}$
310
Retrieve CRC (port_p) from register file
B
312
Is b=1 and s < x ?
Yes
No
316
Is b=B and (s > or = y) ?
Yes
No
314
Store padding at (addr(b) + s) in main memory
318
Store input (i) at (addr(b) + s) in main memory; increment i
A

FIG._3A

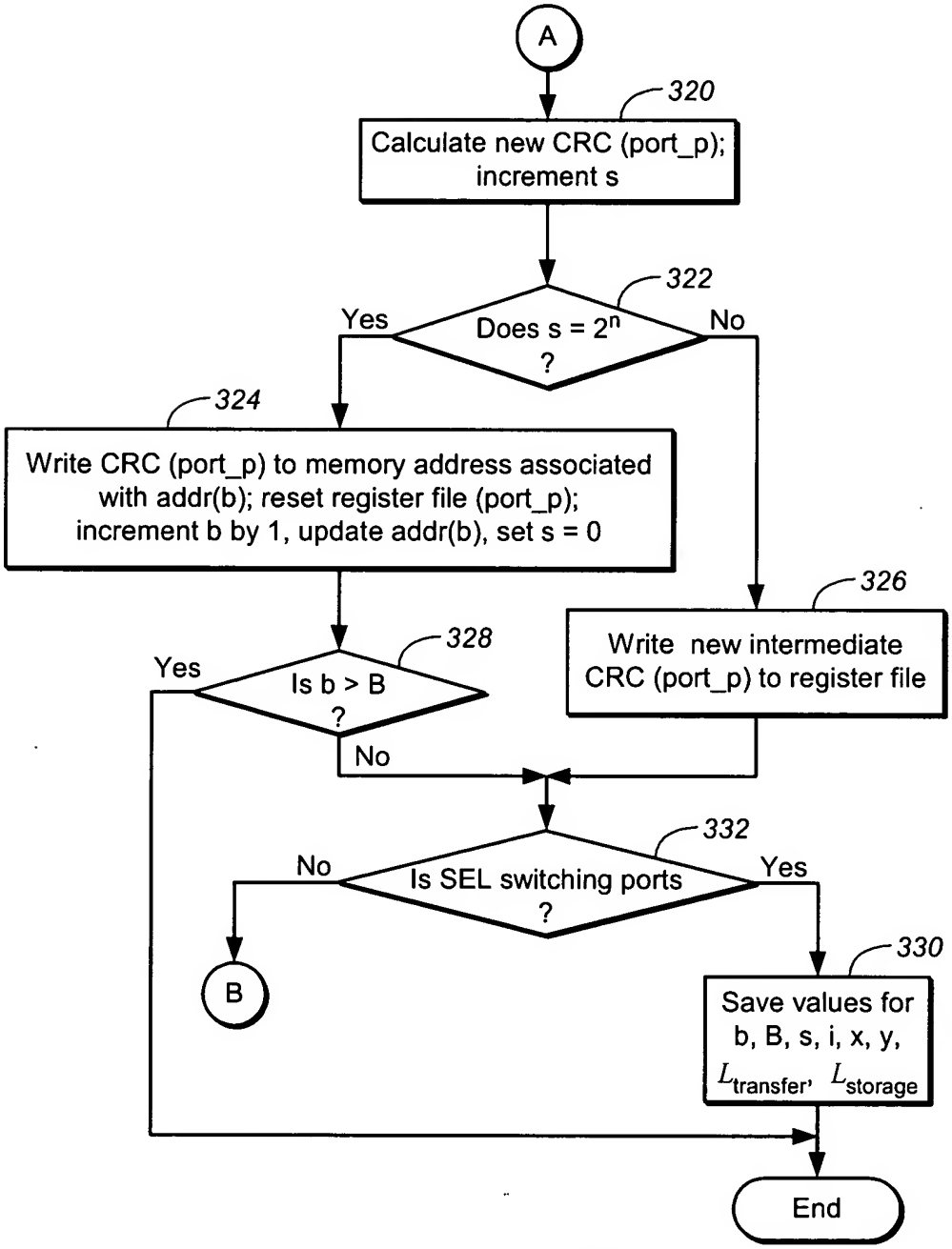
A
320
Calculate new CRC (port_p); increment s
322
Does s = 2^n ?
Yes
No
324
Write CRC (port_p) to memory address associated with addr(b); reset register file (port_p); increment b by 1, update addr(b), set s = 0
326
Write new intermediate CRC (port_p) to register file
328
Is b > B ?
Yes
No
332
Is SEL switching ports ?
No
Yes
B
330
Save values for b, B, s, i, x, y, $L_{transfer}$, $L_{storage}$
End

FIG._3B

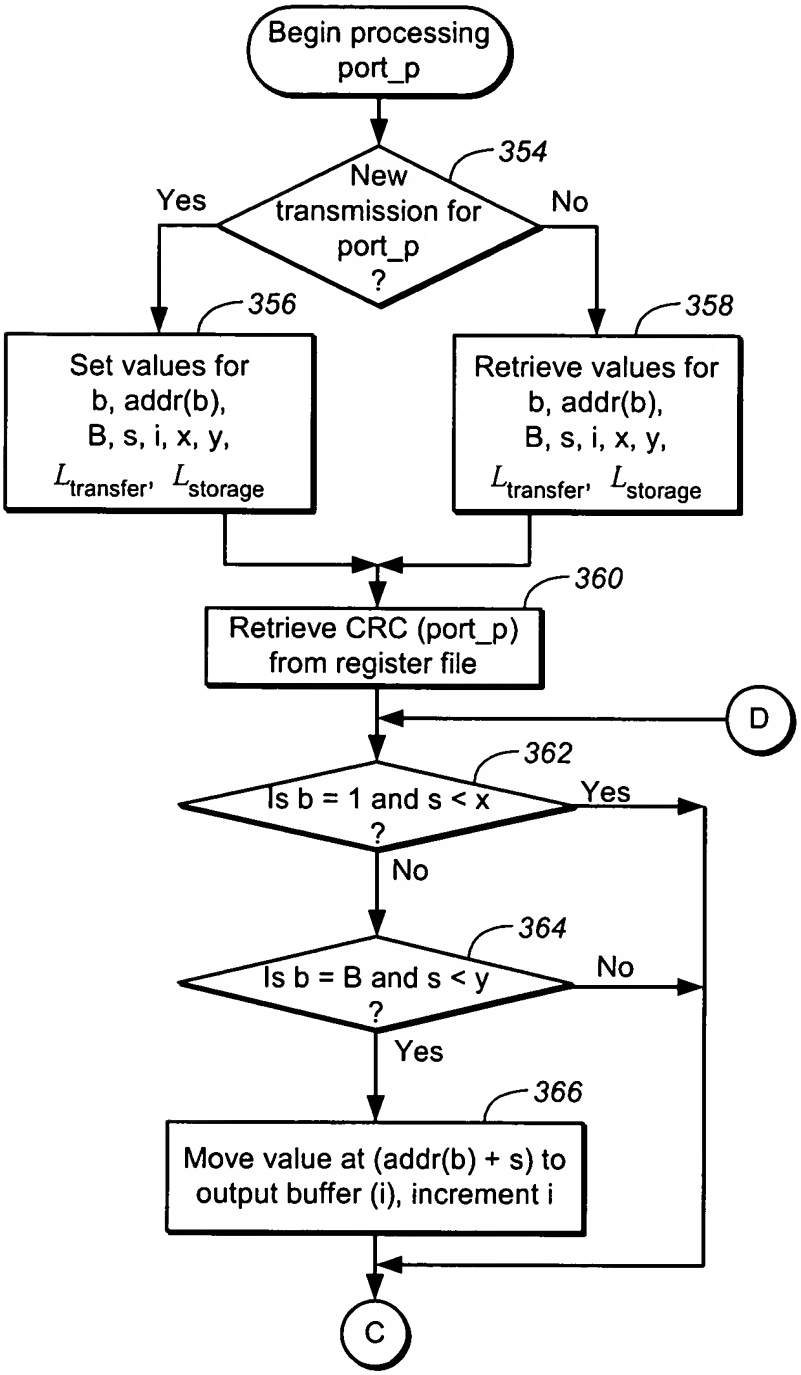
Begin processing port_p
354
New transmission for port_p ?
Yes
No
356
Set values for b, addr(b), B, s, i, x, y, $L_{transfer}$, $L_{storage}$
358
Retrieve values for b, addr(b), B, s, i, x, y, $L_{transfer}$, $L_{storage}$
360
Retrieve CRC (port_p) from register file
D
362
Is b = 1 and s < x ?
Yes
No
364
Is b = B and s < y ?
No
Yes
366
Move value at (addr(b) + s) to output buffer (i), increment i
C

FIG._3C

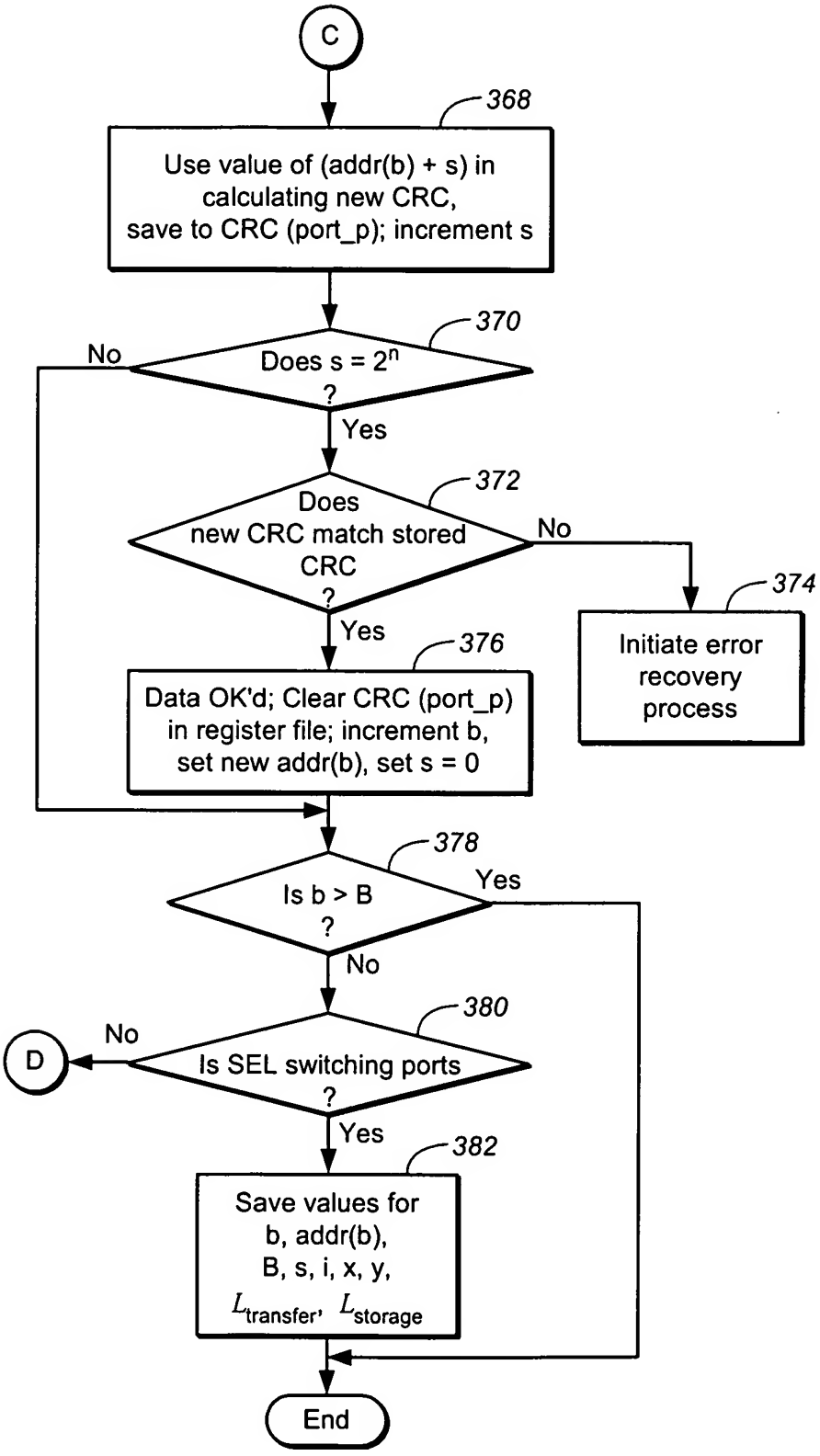
C
368
Use value of (addr(b) + s) in calculating new CRC, save to CRC (port_p); increment s
370
Does s = 2^n ?
No
Yes
372
Does new CRC match stored CRC ?
No
Yes
374
Initiate error recovery process
376
Data OK'd; Clear CRC (port_p) in register file; increment b, set new addr(b), set s = 0
378
Is b > B ?
Yes
No
380
Is SEL switching ports ?
No
D
Yes
382
Save values for b, addr(b), B, s, i, x, y, $L_{transfer}$, $L_{storage}$
End

FIG._3D